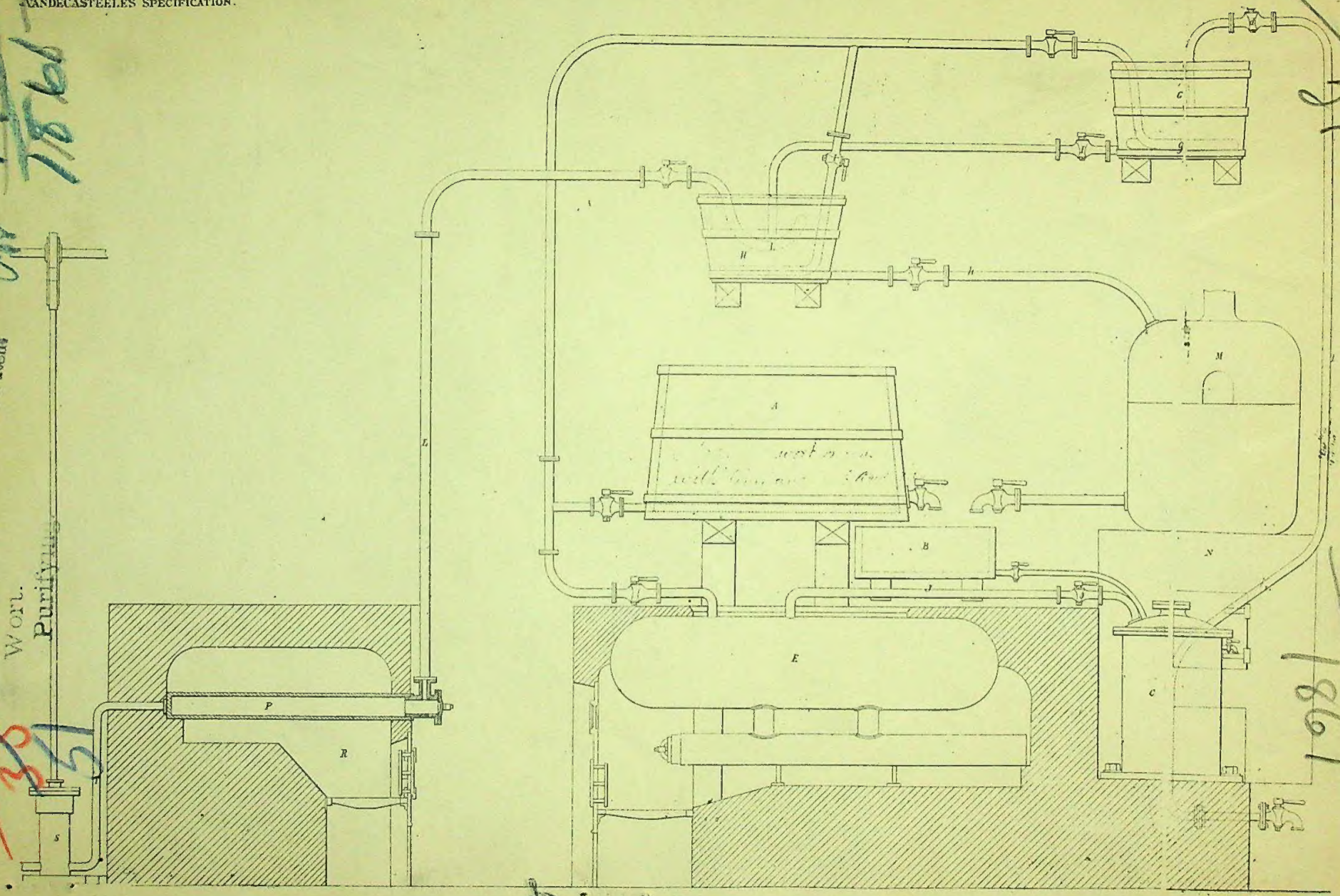
A.D. 1861, MAR. 28. Nº 775.
VANDECASTEELE'S SPECIFICATION.



British Patent

Mashing-
Wort.
Purifying

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BEVERAGES
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A.D. 1861, *28th March.* N° 775.

Brewing.

LETTERS PATENT to Louis Jean Vandecasteele, of the City of Lille, in the Empire of France, Brewer, for the Invention of "IMPROVEMENTS IN BREWING."

Sealed the 26th September 1861, and dated the 28th March 1861.

PROVISIONAL SPECIFICATION left by the said Louis Jean Vandecasteele at the Office of the Commissioners of Patents, with his Petition, on the 28th March 1861.

I, LOUIS JEAN VANDECASTEELE, of the City of Lisle, in the Empire of France, Brewer, do hereby declare the nature of the said Invention for "IMPROVEMENTS IN BREWING," to be as follows:—

The beneficial results obtained in the manufacture of sugar by the judicious employment of certain chemical processes have induced me to apply some of these processes which I have thought suitable to the manufacture of beer. After having adapted the best methods used in England, Germany, Belgium, and even in France, I am able successfully to effect the saturation of lime contained in the mash by means of carbonic acid gas insufflated into the same by a nozzle perforated with a number of small holes. The use of lime, which is of incontestable utility for the manufacture of beer as well as sugar, has nevertheless for beer the serious inconvenience of preventing (if used in a certain quantity) alcoholic fermentation; moreover, the use of lime may be detrimental to health. These two effects of lime have probably contributed to limit its use to very small quantities for beer, and consequently deprives the manufacture of this beverage of a great element of success. It is therefore with the view to employ lime in a sufficient quantity for the successful manufacture of beer that I have endeavoured to free the beer (when the good effect

of the lime is produced) from the inconveniences which would result from the presence of lime in solution in the liquid, and it is for this reason I precipitate it to the bottom of a vessel before I introduce it into the boiling copper, where the mixture of the beer is effected with the hops. By this means I obtain the advantages of lime without its inconveniences. Moreover, I have imagined a way of using lime which I believe superior to the methods now used in breweries. I place the mash in a special vessel, and clarify it in the same way as at the beetroot sugar houses, namely, by the use of milk of lime, and instead of letting the lime boil in the beer I decant this mash when arrived at a state of ebullition, and the clarification is completed. I then pass the mash into another copper, where I cause it to boil by means of steam, as in the operation of clarification by precipitation. I introduce then the carbonic acid gas to saturate the lime which is in solution in the mash. To obtain suitable carbonic acid gas, I have determined, amongst the different processes now in use, to employ the one which consists in calcining the chalk in a retort, through which I cause a current of steam or air to pass, which, displacing the carbonic acid arising from the chalk, carries it through a pipe into the mash contained in the copper; these processes of clarifying the mash, and to separate therefrom the lime by means of carbonic acid gas, not being as yet anywhere in use.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Louis Jean Vandecasteele in the Great Seal Patent Office on the 28th September 1861.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, Louis Jean Vandecasteele, of the City of Lille, in the Empire of France, Brewer, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Twenty-eighth day of March, in the year of our Lord One thousand eight hundred and sixty-one, in the twenty-fourth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Louis Jean Vandecasteele, Her special licence that I, the said Louis Jean Vandecasteele, my executors, administrators, and assigns, or such others as I, the said Louis Jean Vandecasteele, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great

Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "IMPROVEMENTS IN BREWING," upon the condition (amongst others) that I, the said Louis Jean Vandecasteele, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calender months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Louis Jean Vandecasteele, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement, that is to say:—

The beneficial results obtained in the manufacture of sugar by the judicious employment of certain chemical processes have induced me to apply some of these processes which I have thought suitable to the manufacture of beer. After having adapted the best method used in England, Germany, Belgium, and even in France, I am able successfully to effect the saturation of lime contained in the mash by means of carbonic acid gas insufflated into the same by a nozzle perforated with a number of small holes. The use of lime, which is of incontestable utility for the manufacture of beer as well as sugar, has, nevertheless, for beer the serious inconvenience of preventing (if used in a certain quantity) alcoholic fermentation; moreover, the use of lime may be detrimental to health. These two effects of lime have probably contributed to limit its use to very small quantities for beer, and, consequently, deprives the manufacture of this beverage of a great element of success. It is, therefore, with the view to employ lime in a sufficient quantity for the successful manufacture of beer that I have endeavoured to free the beer (when the good effect of the lime is produced) from the inconvenience which would result from the presence of lime in solution in the liquid, and it is for this reason I precipitate it to the bottom of a vessel before I introduce it into the boiling copper where the mixture of the beer is effected with the hops; by this means I obtain the advantages of lime without its inconveniences. Moreover, I have imagined a way of using lime which I believe superior to the methods now used in breweries. I place the mash in a special vessel, and clarify it in the same way as at the beetroot sugar houses, namely, by the use of milk of lime, and instead of letting the lime boil in the beer I decant this mash when arrived at a state of ebullition, and the clarification is completed. I then pass the mash into another copper, where I cause it to boil by means of steam, as in the operation of clarification by precipitation; I introduce then the carbonic acid

gas to saturate the lime which is in solution in the mash. To obtain suitable carbonic acid gas, I have determined, amongst the different processes now in use, to employ the one which consists in calcining the chalk in a retort, through which I cause a current of steam or air to pass, which, displacing the carbonic acid arising from the chalk, carries it through a pipe into the mash contained in the copper; these processes of clarifying the mash, and to separate therefrom the lime by means of carbonic acid gas, not being as yet anywhere in use.

My Invention has for its object an improved method of manufacturing beer by means of a sufficient quantity of lime introduced into the mash to remove all the invisible or extraneous particles detrimental to the goodness of the manufacture, and to make better work in the succeeding stages, and obtain a greater yield.

My method consists in clarifying the mash, and then separating the lime by the insufflation of carbonic acid gas by means of a perforated worm. The value of lime in the manufacture of beer is well known, but its use involves some inconveniences; for example, when used in certain quantities it prevents the alcoholic fermentation; lime is also considered detrimental to health. It is, therefore, advantageous to use a suitable quantity of lime, but the fear of the consequences of using it has till now restricted its use to very small quantities of beer, and deprived this branch of manufacture of a great element of success. With the view of being able to employ lime in sufficient and proper quantity to ensure the successful manufacture of beer, I free the beer of the lime, after the useful action thereof has taken place, by precipitating the lime to the bottom of the vessel before introducing the liquid into the boiling copper where the mixture of the beer and the hops is made. I obtain by these means the advantage of employing the lime without its inconveniences. Moreover, I have invented a method of using lime which I consider superior to that now used in brewing. I place the mash in a special vessel, and clarify it in the same way as is at present practised in the manufacture of beetroot sugar, namely, with milk of lime, but instead of allowing the lime to boil in the beer I draw off the mash when it has arrived at the boiling point, and the clarification takes place. After the clarification I cause the mash to pass into another vessel, where I boil it by means of steam, as in the process of clarification by precipitation, and I then introduce the carbonic acid gas, and saturate the lime which is in solution in the mash as before stated. To obtain suitable carbonic acid gas, and in sufficient quantity, among the different processes now in use, I prefer to employ that in which chalk is calcined in a retort, through which I drive a current of air or steam, which mixes with the

carbonic acid given off from the chalk, and carries it through a pipe into the mash, but other methods of producing carbonic acid gas may be employed.

In order to make my Invention for the manufacture of beer better understood, I have annexed to this description, by way of example, a Drawing representing in elevation and section all the parts of the apparatus used in the manufacture of beer which I have perfected.

PROCESS OF MANUFACTURE.

The liquid after passing out of the mash tub A flows into an intermediate receptacle B, from whence it passes into the elevator C, thence through a tube D fitted with a cock *d*; a boiler E supplies the steam necessary for heating by a worm conveniently placed, the liquid contained in the different vessels, but especially that in the mash tub A, in the clarifying vat G, and in the saturating vat H; a tube J with a cock *j* also conducts the steam from the boiler E into the elevator C, to raise the liquid which comes into it to the clarifying vat G, in which is added the milk of lime, the mixture being raised to a convenient temperature by the double steam worm *g*. The cock I allows the clear liquid to flow into the saturating vat H, into which the carbonic acid gas is introduced through the perforated end of the tube L, in order to precipitate the lime in the form of carbonate. From the vat H the liquid is next conveyed by a tube *h* into a brewing copper M, heated by an open fire N. The carbonic acid is produced in the retort P, heated by a fire at R, and is forced into the pipe L by the air forced into the retort through the pipe T by an air pump S, or steam may be employed for this purpose instead of air.

Having now fully described and set forth the nature and object of my said Invention of "Improvements in Brewing," together with the best means I am acquainted with for carrying the same into practical effect, I would remark, in conclusion, that I hereby declare my Invention to consist in, and I claim,—

First, saturating lime with carbonic acid gas in the manufacture of beer, as above stated.

Secondly, the purifying or clarifying the liquid after it has passed out of the mash tub, as above stated.

In witness whereof, I, the said Louis Jean Vandecasteele, have hereunto set my hand and seal, this Twenty-seventh day of September, in the year of our Lord One thousand eight hundred and sixty-one.

VANDECASTEELE. (L.S.)

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Printers to the Queen's most Excellent Majesty. 1861.